HW answers

16) $p = 0.30 \quad n = 100$

	STATE	CHECK
(a)	(1) SRS	stated
	(2) $np \geq 10$	$(100)(0.30) \geq 10$
	$nq \geq 10$	$(100)(0.70) \geq 10$
	(3) pop $\geq 10n$	over 1000 people wear contacts

$N(0.30, 0.0458)$

(b) $P(\hat{p} > 1/3)=$ normalcdf(0.3333, E99, 0.30, 0.0458) = 0.2336

20) $p = 0.44$ $n=244$

STATE	**CHECK**
(1) SRS	assumed representative
(2) $np \geq 10$	$(244)(0.44) \geq 10$
$nq \geq 10$	$(244)(0.56) \geq 10$
(3) pop > 10n	there are more than 2440 binge drinkers

$N(0.44, 0.03)$

$P(\hat{p} < 0.3934)$ = normalcdf(-E99, 0.3934, 0.44, 0.03) = 0.0602

This sample only happens about 6% of the time. That is unusual.

22) $p = 0.92$ $n = 160$

<u>**STATE**</u>	<u>**CHECK**</u>
(1) SRS	assumed
(2) $np \geq 10$	$(160)(0.92) \geq 10$
$nq \geq 10$	$(160)(0.08) \geq 10$
(3) pop > 10n	there are more than 1600 seeds

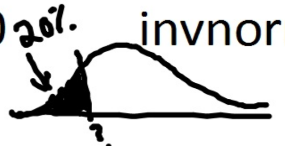
$N(0.92, 0.02145)$

$P(\hat{p} > 0.95)$ = normalcdf(0.95, E99, 0.92, 0.02145) = 0.081

38) N(35.4, 4.2)

(a) P(X > 40) = normalcdf(40, E99, 35.4, 4.2) = 0.1367

(b) P(X < ?) = 0.20 invnorm(0.20, 35.4, 4.2) = 31.87 inches



(c) n = 4

STATE	**CHECK**
- SRS	- assumed representative
- n $\geq$ 30 or norm pop.	- stated normal pop
- pop $\geq$ 10(*n*)	- all years with rain in Ithaca $\geq$ 40

N(35.4, 2.1)

(d) P($\bar{x}$ < 30) = normalcdf(-E99, 30, 35.4, 2.1) = 0.0051

48) N(10.2, 0.12)

(a) $P(X < 10)$ = normalcdf(-E99, 10, 10.2, 0.12) = 0.0478

(b) P(underweight) = 0.0478 P(underweight^c) = 0.9522

$P(U^c \cap U^c \cap U^c) = (0.9522)(0.9522)(0.9522) = 0.8633$

(c) n = 3

<u>**STATE**</u>	<u>**CHECK**</u>
- SRS	- assumed representative
- $n \geq 30$ or normal pop	- stated normal population
- pop $\geq 10(n)$	- total # potato chip bags ≥ 30

N(10.2, 0.0693) $\frac{0.12}{\sqrt{3}}$

(c) continued....

$P(\bar{x} < 10)$ = normalcdf(-E99, 10, 10.2, 0.0693) = 0.00195

$\sigma / \sqrt{n}$

(d) n = 24 checks still pass from before

N(10.2, 0.0245) $\frac{0.12}{\sqrt{24}}$

$P(\bar{x} < 10)$ = normalcdf(-E99, 10, 10.2, 0.0245) = 0